

PATENT ABSTRACTS OF JAPAN

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(54) IMAGE PICKUP DEVICE, DISPLAY DEVICE, RECORDER,
REPRODUCING DEVICE, TRANSMITTER AND RECORDING MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a panorama image free from the feeling of incongruity against the change in weather or time or the like.

SOLUTION: The video signal from this image pickup device 10 being an image pickup means is fed to a video capture board 31 of a computer 30. A magnification lens of a lens block section 11 is driven by a drive instruction from a camera controller 41. The image pickup device 10 is placed on a panhead 50 and driven in each direction by a drive instruction from a pan/tilt controller 43. A mode controller 42 controls the image pickup device 10 and the universal head 50 with respect to an absolute position drive request from the means 30. The computer 30 is provided with a storage device 32, an image processing unit 33 and a controller 34, and video signal processing and control is conducted by the

units to form a panorama image. A video signal generated by the computer 30 is fed to a computer monitor 60, which acts like a user in interface.

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2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The image pick-up equipment carry out becoming from the control means control about an image pick-up means generate a video signal, the driving means, to which the image pick-up range of the above-mentioned image pick-up means changes, a video-signal processing means form the video signal which the video signal from the above-mentioned image pick-up means is supplied, and has a field angle large than the one image pick-up range of the above-mentioned image pick-up means, and an image pick-up, with the above-mentioned image pick-up means, actuation by the above-mentioned driving means and processing by the above-mentioned video-signal processing means as the description.

[Claim 2] An image pick-up means to generate a video signal, and the optical means which incurvates the image pick-up range of the above-mentioned image pick-up means, and makes a field angle larger than the original image pick-up

range of the above-mentioned image pick-up means picturize, A video-signal processing means to form the video signal which normalizes the video signal with which it was supplied, and the video signal from the above-mentioned image pick-up means carried out distortion, and was picturized [above-mentioned], and has a field angle larger than the original image pick-up range of the above-mentioned image pick-up means, Image pick-up equipment characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, and processing with the above-mentioned video-signal processing means.

[Claim 3] Image pick-up equipment according to claim 1 or 2 characterized by performing control by the above-mentioned control means by the time amount which established the time setting means and was set as the above-mentioned time setting means.

[Claim 4] Image pick-up equipment according to claim 1 or 2 characterized by to perform control by the above-mentioned control means when a storage means to memorize the video signal from the above-mentioned image pick-up means, and a comparison means to detect the difference between the video signal from the above-mentioned image pick-up means and the video signal memorized by the above-mentioned storage means are established and a difference is detected by the above-mentioned comparison means.

[Claim 5] Image pick-up equipment according to claim 1 or 2 characterized by performing control by the above-mentioned control means when a means to detect or recognize the voice of the location in which the above-mentioned image pick-up means was formed is established and the above-mentioned voice has been detected or recognized.

[Claim 6] Image pick-up equipment according to claim 1 or 2 characterized by performing control by the above-mentioned control means when a means to detect or recognize change of the physical condition of the location in which the above-mentioned image pick-up means was formed is established and change of the above-mentioned physical condition has been detected or recognized.

[Claim 7] When a means to specify the range of the arbitration in the video signal formed with the above-mentioned video-signal processing means is established and a difference is detected by every set-up time amount and the video signal by which the image pick-up was carried out [above-mentioned], Or when the voice of the location in which the above-mentioned image pick-up means was formed has been detected or recognized, Or image pick-up equipment according to claim 1 or 2 characterized by performing control by the above-mentioned control means for the range of the above-mentioned arbitration when change of the physical condition of the location in which the above-mentioned image pick-up means was formed has been detected or recognized.

[Claim 8] When a difference is detected by the video signal by which the image pick-up was carried out [above-mentioned], or when change of the physical condition of the location in which the above-mentioned image pick-up means was formed has been detected or recognized While control by the above-mentioned control means for the range in which the above-mentioned difference or change has been detected or recognized is performed Image pick-up equipment according to claim 1 or 2 characterized by establishing a means to display the range where the above-mentioned difference or change has been detected or recognized into the video signal formed with the above-mentioned video-signal processing means.

[Claim 9] An image pick-up means to generate a video signal, and the driving means, to which the image pick-up range of the above-mentioned image pick-up means is changed, A video-signal processing means to form the video signal which the video signal from the above-mentioned image pick-up means is supplied, and has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means, The display characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, actuation by the above-mentioned driving means, and processing with the above-mentioned video-signal processing means, and a display means to display the video signal formed with the above-mentioned

video-signal processing means.

[Claim 10] An image pick-up means to generate a video signal, and the optical means which incurvates the image pick-up range of the above-mentioned image pick-up means, and makes a field angle larger than the original image pick-up range of the above-mentioned image pick-up means picturize, A video-signal processing means to form the video signal which normalizes the video signal with which it was supplied, and the video signal from the above-mentioned image pick-up means carried out distortion, and was picturized [above-mentioned], and has a field angle larger than the original image pick-up range of the above-mentioned image pick-up means, The display characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, and processing with the above-mentioned video-signal processing means, and a display means to display the video signal formed with the above-mentioned video-signal processing means.

[Claim 11] The display according to claim 9 or 10 characterized by performing control by the above-mentioned control means by the time amount which established the time setting means and was set as the above-mentioned time setting means.

[Claim 12] The display according to claim 9 or 10 characterized by performing

control by the above-mentioned control means when a storage means to memorize the video signal from the above-mentioned image pick-up means, and a comparison means to detect the difference between the video signal from the above-mentioned image pick-up means and the video signal memorized by the above-mentioned storage means are established and a difference is detected by the above-mentioned comparison means.

[Claim 13] The display according to claim 9 or 10 characterized by performing control by the above-mentioned control means when a means to detect or recognize the voice of the location in which the above-mentioned image pick-up means was formed is established and the above-mentioned voice has been detected or recognized.

[Claim 14] The display according to claim 9 or 10 characterized by performing control by the above-mentioned control means when a means to detect or recognize change of the physical condition of the location in which the above-mentioned image pick-up means was formed is established and change of the above-mentioned physical condition has been detected or recognized.

[Claim 15] When a means to specify the range of the arbitration in the video signal formed with the above-mentioned video-signal processing means is established and a difference is detected by every set-up time amount and the video signal by which the image pick-up was carried out [above-mentioned], Or

when the voice of the location in which the above-mentioned image pick-up means was formed has been detected or recognized, Or the display according to claim 9 or 10 characterized by performing control by the above-mentioned control means for the range of the above-mentioned arbitration when change of the physical condition of the location in which the above-mentioned image pick-up means was formed has been detected or recognized.

[Claim 16] When a difference is detected by the video signal by which the image pick-up was carried out [above-mentioned], or when change of the physical condition of the location in which the above-mentioned image pick-up means was formed has been detected or recognized While control by the above-mentioned control means for the range in which the above-mentioned difference or change has been detected or recognized is performed The display according to claim 9 or 10 characterized by establishing a means to display the range where the above-mentioned difference or change has been detected or recognized into the video signal formed with the above-mentioned video-signal processing means.

[Claim 17] An image pick-up means to generate a video signal, and the driving means, to which the image pick-up range of the above-mentioned image pick-up means is changed, A record means to record through a video-signal processing means to form the video signal which has a field angle larger than the one image

pick-up range of the above-mentioned image pick-up means, from the video signal with which direct sequential record or the above-mentioned image pick-up range changed the video signal from the above-mentioned image pick-up means, The recording device characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, actuation by the above-mentioned driving means, processing with the above-mentioned video-signal processing means, and record with the above-mentioned record means.

[Claim 18] An image pick-up means to generate a video signal, and the optical means which incurvates the image pick-up range of the above-mentioned image pick-up means, and makes a field angle larger than the original image pick-up range of the above-mentioned image pick-up means picturize, A record means to record through a video-signal processing means to form the video signal which normalizes the video signal which was made above-mentioned to direct-sequential-record or distort the video signal from the above-mentioned image pick-up means, and was picturized, and has a field angle larger than the original image pick-up range of the above-mentioned image pick-up means, The recording device characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, processing with the above-mentioned video-signal processing means, and record with the

above-mentioned record means.

[Claim 19] The recording device according to claim 17 or 18 characterized by performing control by the above-mentioned control means by the time amount which established the time setting means and was set as the above-mentioned time setting means.

[Claim 20] The recording device according to claim 17 or 18 characterized by performing control by the above-mentioned control means when a storage means to memorize the video signal from the above-mentioned image pick-up means, and a comparison means to detect the difference between the video signal from the above-mentioned image pick-up means and the video signal memorized by the above-mentioned storage means are established and a difference is detected by the above-mentioned comparison means.

[Claim 21] The recording device according to claim 17 or 18 characterized by performing control by the above-mentioned control means when a means to detect or recognize the voice of the location in which the above-mentioned image pick-up means was formed is established and the above-mentioned voice has been detected or recognized.

[Claim 22] The recording device according to claim 17 or 18 characterized by performing control by the above-mentioned control means when a means to detect or recognize change of the physical condition of the location in which the

above-mentioned image pick-up means was formed is established and change of the above-mentioned physical condition has been detected or recognized.

[Claim 23] The regenerative apparatus carry out becoming from the control means control about a playback means to by_which the video signal with which the image pick-up range changed reproduces the record medium which comes to be carried out sequential record, a video-signal processing means form the video signal which the video signal reproduced by the above-mentioned playback means is supplied, and has a field angle large than the one image pick-up range of the above-mentioned image pick-up means, and playback by the above-mentioned playback means and processing by the above-mentioned video-signal processing means as the description.

[Claim 24] A playback means by which the video signal with which the image pick-up range curved reproduces the record medium which comes to carry out sequential record, A video-signal processing means to form the video signal which normalizes the video signal with which it was supplied, and the video signal reproduced by the above-mentioned playback means carried out distortion, and was picturized [above-mentioned], and has a field angle larger than the original image pick-up range of the above-mentioned image pick-up means, The regenerative apparatus characterized by consisting of a control means which controls playback with the above-mentioned playback means, and

processing with the above-mentioned video-signal processing means.

[Claim 25] An image pick-up means to generate a video signal, and the driving means, to which the image pick-up range of the above-mentioned image pick-up means is changed, A transmission means to transmit through a video-signal processing means to form the video signal which has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means, from the video signal with which direct sequential transmission or the above-mentioned image pick-up range changed the video signal from the above-mentioned image pick-up means, Transmission equipment characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, actuation by the above-mentioned driving means, processing with the above-mentioned video-signal processing means, and transmission with the above-mentioned transmission means.

[Claim 26] An image pick-up means to generate a video signal, and the optical means which incurvates the image pick-up range of the above-mentioned image pick-up means, and makes a field angle larger than the original image pick-up range of the above-mentioned image pick-up means picturize, A transmission means to transmit through a video-signal processing means to form the video signal which normalizes the video signal which was made above-mentioned to direct-sequential-transmit or distort the video signal from the above-mentioned

image pick-up means, and was picturized, and has a field angle larger than the original image pick-up range of the above-mentioned image pick-up means, Transmission equipment characterized by consisting of a control means which controls an image pick-up with the above-mentioned image pick-up means, processing with the above-mentioned video-signal processing means, and transmission with the above-mentioned transmission means.

[Claim 27] Transmission equipment according to claim 25 or 26 characterized by performing control by the above-mentioned control means by the time amount which established the time setting means and was set as the above-mentioned time setting means.

[Claim 28] Transmission equipment according to claim 25 or 26 characterized by performing control by the above-mentioned control means when a storage means to memorize the video signal from the above-mentioned image pick-up means, and a comparison means to detect the difference between the video signal from the above-mentioned image pick-up means and the video signal memorized by the above-mentioned storage means are established and a difference is detected by the above-mentioned comparison means.

[Claim 29] Transmission equipment according to claim 25 or 26 characterized by performing control by the above-mentioned control means when a means to detect or recognize the voice of the location in which the above-mentioned

image pick-up means was formed is established and the above-mentioned voice has been detected or recognized.

[Claim 30] Transmission equipment according to claim 25 or 26 characterized by performing control by the above-mentioned control means when a means to detect or recognize change of the physical condition of the location in which the above-mentioned image pick-up means was formed is established and change of the above-mentioned physical condition has been detected or recognized.

[Claim 31] When a means to specify the range of the arbitration in the video signal formed with the above-mentioned video-signal processing means is established and a difference is detected by every set-up time amount and the video signal by which the image pick-up was carried out [above-mentioned], Or when the voice of the location in which the above-mentioned image pick-up means was formed has been detected or recognized, Or transmission equipment according to claim 25 or 26 characterized by performing control by the above-mentioned control means for the range of the above-mentioned arbitration when change of the physical condition of the location in which the above-mentioned image pick-up means was formed has been detected or recognized.

[Claim 32] When a difference is detected by the video signal by which the image pick-up was carried out [above-mentioned], or when change of the physical

condition of the location in which the above-mentioned image pick-up means was formed has been detected or recognized. While control by the above-mentioned control means for the range in which the above-mentioned difference or change has been detected or recognized is performed. Transmission equipment according to claim 25 or 26 characterized by establishing a means to display the range where the above-mentioned difference or change has been detected or recognized into the video signal formed with the above-mentioned video-signal processing means.

[Claim 33] An image pick-up means to generate a video signal, and the driving means, to which the image pick-up range of the above-mentioned image pick-up means is changed, The control means which controls an image pick-up with the above-mentioned image pick-up means and actuation by the above-mentioned driving means is used. The record medium with which the video signal from the above-mentioned image pick-up means is characterized by the thing which it comes to record through a video-signal processing means to form the video signal which has a field angle larger than the one image pick-up range of the above-mentioned image pick-up means from the video signal with which direct sequential record or the above-mentioned image pick-up range changed.

[Claim 34] An image pick-up means to generate a video signal, and the optical means which incurvates the image pick-up range of the above-mentioned image

pick-up means, and makes a field angle larger than the original image pick-up range of the above-mentioned image pick-up means picture, The control means which controls an image pick-up with the above-mentioned image pick-up means is used. The above-mentioned image pick-up means or the video signal of - Direct sequential record, Or the record medium characterized by the thing which it comes to record through a video-signal processing means to form the video signal which normalizes the video signal which was made to carry out distortion and was picture [above-mentioned], and has a field angle larger than the original image pick-up range of the above-mentioned image pick-up means.

[Claim 35] The record medium according to claim 33 or 34 characterized by performing processing with the control and the above-mentioned video-signal processing means by the above-mentioned control means by the time amount which established the time setting means and was set as the above-mentioned time setting means.

[Claim 36] The record medium according to claim 33 or 34 carry out that processing by the control and the above-mentioned video-signal processing means by the above-mentioned control means is performed when a storage means memorize the video signal from the above-mentioned image pick-up means, and a comparison means detect the difference between the video signal

from the above-mentioned image pick-up means and the video signal memorized by the above-mentioned storage means are established and a difference is detected by the above-mentioned comparison means as the description.

[Claim 37] The record medium of claims 33 or 34 characterized by performing processing with the control and the above-mentioned video-signal processing means by the above-mentioned control means when a means to detect or recognize the voice of the location in which the above-mentioned image pick-up means was formed is established and the above-mentioned voice has been detected or recognized.

[Claim 38] The record medium according to claim 33 or 34 characterized by performing processing with the control and the above-mentioned video-signal processing means by the above-mentioned control means when a means to detect or recognize change of the physical condition of the location in which the above-mentioned image pick-up means was formed is established and change of the above-mentioned physical condition has been detected or recognized.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] In case this invention performs the monitor from a remote place using a computer network, it is used, and it relates to a suitable image pick-up, a display, record, playback, transmission equipment, and a record medium.

[0002]

[Description of the Prior Art] It considers performing view ** for the image from a remote place for the object, such as observation of an event, and a monitor, advice, using a computer network (Internet). When performing view ** from such a remote place, the so-called panorama image which extended the horizontal field angle is suitable for view **.

[0003] Then, generally, although the approach using the lens of a wide angle system as an approach of obtaining such a panorama image is learned, for example, since the lens of a wide angle system can also extend a vertical field angle, it has a possibility that the number of scanning lines of the range of a panorama image may decrease, and resolution may fall, with the lens of the expensive and usual wide angle system.

[0004] On the other hand, a panorama image is picturized beforehand, and is saved at storage, such as a hard disk, and the approach of inserting in the newly

picturized image into it, compounding it, and forming a panorama image is enforced. however, a false panorama image is formed by this approach -- **** -- there were problems, such as producing sense of incongruity between the new images and preservation images by which did not pass and insertion composition was carried out to change of the weather or time amount.

[0005]

[Problem(s) to be Solved by the Invention] This application was accomplished in view of such a point, even if the lens of an expensive wide angle system was used for the trouble which it is going to solve with conventional equipment, it had a possibility that resolution might fall, and by the approach of inserting in a preservation image, compounding and forming a panorama image, there were problems, such as producing sense of incongruity, for example to change of the weather or time amount.

[0006]

[Means for Solving the Problem] For this reason, in this invention, as the image pick-up range of an image pick-up means is changed and the video signal which compounds the video signal from such an image pick-up means, and has a large field angle is formed, according to this, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be obtained with high resolution.

[0007] Moreover, in this invention, as the image pick-up range of an image pick-up means is incurvated and the video signal which normalizes the video signal from such an image pick-up means, and has a large field angle is formed, according to this, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be obtained with high resolution.

[0008] Furthermore, under every time amount set up in this invention, and specific conditions, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and always good view ** can be performed.

[0009]

[Embodiment of the Invention] That is, this invention consists of a control means which controls an image pick-up means to generate a video signal, the driving means, to which the image pick-up range of an image pick-up means is changed, a video-signal processing means form the video signal which the video signal from an image pick-up means is supplied, and has a field angle larger than the one image pick-up range of an image pick-up means, and an image pick-up, with an image pick-up means, actuation by the driving means and processing with a video-signal processing means.

[0010] Or an image pick-up means by which this invention generates a video

signal and the optical means which incurvates the image pick-up range of an image pick-up means, and makes a field angle larger than the original image pick-up range of an image pick-up means picturize, It consists of a control means which controls a video-signal processing means to form the video signal which normalizes the video signal which the video signal from an image pick-up means was supplied, was made to distort, and was picturized, and has a field angle larger than the original image pick-up range of an image pick-up means, and an image pick-up, with an image pick-up means and processing with a video-signal processing means.

[0011] Moreover, an image pick-up means by which this invention generates a video signal and the driving means, to which the image pick-up range of an image pick-up means is changed, A video-signal processing means to form the video signal which the video signal from an image pick-up means is supplied, and has a field angle larger than the one image pick-up range of an image pick-up means, It consists of a control means which controls an image pick-up with an image pick-up means, actuation by the driving means, and processing with a video-signal processing means, and a display means to display the video signal formed with the video-signal processing means.

[0012] Or an image pick-up means by which this invention generates a video signal and the optical means which incurvates the image pick-up range of an

image pick-up means, and makes a field angle larger than the original image pick-up range of an image pick-up means picturize, A video-signal processing means to form the video signal which normalizes the video signal which the video signal from an image pick-up means was supplied, was made to distort, and was picturized, and has a field angle larger than the original image pick-up range of an image pick-up means, It consists of a control means which controls an image pick-up with an image pick-up means, and processing with a video-signal processing means, and a display means to display the video signal formed with the video-signal processing means.

[0013] Moreover, an image pick-up means by which this invention generates a video signal and the driving means, to which the image pick-up range of an image pick-up means is changed, A record means to record through a video-signal processing means to form the video signal which has a field angle larger than the one image pick-up range of an image pick-up means, from the video signal with which direct sequential record or the image pick-up range changed the video signal from an image pick-up means, It consists of a control means which controls an image pick-up with an image pick-up means, actuation by the driving means, processing with a video-signal processing means, and record with a record means.

[0014] Or an image pick-up means by which this invention generates a video

signal and the optical means which incurvates the image pick-up range of an image pick-up means, and makes a field angle larger than the original image pick-up range of an image pick-up means picturize, A record means to record through a video-signal processing means to form the video signal which normalizes the video signal which direct-sequential-recorded, or was made to distort the video signal from an image pick-up means, and was picturized, and has a field angle larger than the original image pick-up range of an image pick-up means, It consists of a control means which controls an image pick-up with an image pick-up means, processing with a video-signal processing means, and record with a record means.

[0015] Moreover, this invention becomes from the control means control about a playback means to by_which the video signal with which the image pick-up range changed reproduces the record medium which comes to carry out sequential record, a video-signal processing means form the video signal which the video signal reproduced by the playback means is supplied, and has a field angle larger than the one image pick-up range of an image pick-up means, and playback, with a playback means and processing with a video-signal processing means.

[0016] Or a playback means by which this invention reproduces the record medium with which it comes to carry out sequential record of the video signal

with which the image pick-up range curved, A video-signal processing means to form the video signal which normalizes the video signal which the video signal reproduced by the playback means was supplied, was made to distort, and was picturized, and has a field angle larger than the original image pick-up range of an image pick-up means, It consists of a control means which controls playback with a playback means, and processing with a video-signal processing means.

[0017] Moreover, an image pick-up means by which this invention generates a video signal and the driving means, to which the image pick-up range of an image pick-up means is changed, A transmission means to transmit through a video-signal processing means to form the video signal which has a field angle larger than the one image pick-up range of an image pick-up means, from the video signal with which direct sequential transmission or the image pick-up range changed the video signal from an image pick-up means, It consists of a control means which controls an image pick-up with an image pick-up means, actuation by the driving means, processing with a video-signal processing means, and transmission with a transmission means.

[0018] Or an image pick-up means by which this invention generates a video signal and the optical means which incurvates the image pick-up range of an image pick-up means, and makes a field angle larger than the original image pick-up range of an image pick-up means picturize, A transmission means to

transmit through a video-signal processing means to form the video signal which normalizes the video signal which direct-sequential-transmitted, or was made to distort the video signal from an image pick-up means, and was picturized, and has a field angle larger than the original image pick-up range of an image pick-up means, It consists of a control means which controls an image pick-up with an image pick-up means, processing with a video-signal processing means, and transmission with a transmission means.

[0019] Moreover, it comes to be recorded this invention through a video-signal processing means form the video signal with which the video signal from an image pick-up means has a field angle larger than the one image pick-up range of a video signal to an image pick-up means to by_which direct sequential record or the image pick-up range changed, using the control means which controls an image pick-up means generate a video signal, the driving means, to which the image pick-up range of an image pick-up means changes, and an image pick-up with an image pick-up means and actuation by the driving means.

[0020] Or an image pick-up means by which this invention generates a video signal and the optical means which incurvates the image pick-up range of an image pick-up means, and makes a field angle larger than the original image pick-up range of an image pick-up means picturize, The control means which controls an image pick-up with an image pick-up means is used. The video

signal from an image pick-up means Direct sequential record, Or it comes to be recorded through a video-signal processing means to form the video signal which normalizes the video signal which was made to distort and was picturized and has a field angle larger than the original image pick-up range of an image pick-up means.

[0021] Furthermore, when a difference is detected by every time amount to which this invention was set, and the picturized video signal, when the voice of the location in which the image pick-up means was formed has been detected or recognized, or when change of the physical condition of the location in which the image pick-up means was formed has been detected or recognized, it comes to carry out control by the above-mentioned control means.

[0022]

[Example] Hereafter, it is the block diagram showing the configuration of an example of the equipment with which drawing 1 applied this invention explaining this invention with reference to a drawing.

[0023] In this drawing 1 , the image pick-up equipment 10 as an image pick-up means shows a video camera as a whole, and image formation of the image pick-up light which reaches from a photographic subject (not shown) is carried out to a solid state image pickup device 12, for example, CCD, through the lens of the lens block section 11, drawing, etc. And by this CCD12, after the visual

field image of arbitration is changed into a video signal, signal separation (sample hold: SH) / automatic-gain-control (AGC) equipment 13 is given.

[0024] With signal separation / automatic-gain-control equipment 13, while sample hold of the image output signal from CCD12 is carried out according to a predetermined pixel clock, automatic gain control is performed so that it may have predetermined gain, for example with the control signal of an auto iris (AE). The image output signal acquired in this way is supplied to a signal processor 15 through A/D-conversion equipment 14.

[0025] In a signal processor 15, the inputted signal is changed into each signals, such as brightness, the color difference, and a video signal, and is supplied to a television monitor 20 and the video capture board 31 of a computer 30 mentioned later as a video signal. The video signal supplied to this video capture board 31 by this is incorporated by the computer apparatus 30 one by one.

[0026] Moreover, the lens block section 11 of image pick-up equipment 10 is the zoom lens which can change the field angle picturized by driving the lens for variable power. And with the actuation instruction from the camera controller 41 mentioned later, a motor 16, for example, the stepping motor for zoom, rotates, and it is constituted so that the lens for above-mentioned variable power may drive.

[0027] While the camera controller 41 always performs lens control (a focus,

zoom) of image pick-up equipment 10, exposure control (extracting gain, electronic shutter speed), white balance control, image quality control, etc., an interface with the mode controller 42 is performed. And while the control signal which drives the lens for variable power in a demand location is outputted to the actuation circuit (not shown) of a motor 16, for example to an actuation demand of a zoom, the positional information of the lens for variable power always communicates for the mode controller 42.

[0028] Furthermore, image pick-up equipment 10 is installed as a driving means on equipment 50 with the degree of freedom of biaxial hands of cut, such as a pan (right and left) and a tilt (upper and lower sides), for example, a revolution universal head. And with the actuation instruction from the punch Ruta controller 43 mentioned later, a motor 51, for example, the stepping motor for pans, and the stepping motor 52 for tilts rotate, and it is constituted so that the revolution universal head 50 may drive in each direction.

[0029] An interface with the mode controller 42 is performed by the punch Ruta controller 43. And while the control signal driven in the direction of which the revolution universal head 50 was required is outputted to the actuation circuit (not shown) of motors 51 and 52, for example to an actuation demand of each direction of a pan and a tilt, the positional information of each direction of the revolution universal head 50, for example, a pan, and a tilt always communicates

for the mode controller 42.

[0030] Furthermore, the mode controller 42 controls the whole system according to the internal state of image pick-up equipment 10 and the revolution universal head 50, and the interface information from the equipment outside. And this mode controller 42 is connected to a computer apparatus 30 by RS232C, and control is performed [as opposed to / from a computer apparatus 30 / a location actuation demand] absolutely.

[0031] That is, by the mode controller 42, the actuation instruction which drives the motor 16 of the lens block section 11 and the motors 51 and 52 of the revolution universal head 50 in order to picturize [as opposed to / from a computer apparatus 30 / a location actuation demand] the location with image pick-up equipment 10 absolutely can distribute to the camera controller 41 and the punch Ruta controller 43. With it, the positional information from these controllers 41 and 43 is transmitted to a computer apparatus 30 through the mode controller 42.

[0032] Furthermore, storage 32, an image processing system 33, and a control unit 34 are formed in this computer apparatus 30, and this computer apparatus 30 is used for it by these equipments as the video-signal processing means for formation of for example, a panorama image, and a control means. Moreover, the video signal formed with this computer apparatus 30 is supplied to a

computer screen 60, it considers as a user interface, and the conditions of internal processing etc. are determined using the image by which graphical display is carried out on this tubular surface.

[0033] Moreover, the video signal inputted into this computer apparatus 30 from image pick-up equipment 10 is incorporated through a video capture board 31.

In a video capture board 31, while displaying the incorporated video signal on a monitor 60 by the quality of arbitration, it can capture by the quality of arbitration with a capture signal to the graphics formats (for example, the still picture of a bit map format and a JPEG format, an animation, etc.) of arbitration, and can memorize to the storage 32, such as a hard disk.

[0034] The control algorithm furthermore performed with this computer apparatus 30 is explained using drawing 2 .

[0035] If a program starts in drawing 2 , processing which sets up each viewing area of an image pick-up image and a panorama image on a monitor 60 at a step [1] first will be performed. On a monitor 60, as shown for example, in drawing 1 , the viewing area 61 of an image pick-up image and the viewing area 62 of a panorama image are set up by this. And the video signal inputted into the viewing area 61 of these from image pick-up equipment 10 is displayed.

[0036] Furthermore it is a step [2], for example, the timer for communicating with the mode controller 42 periodically is set up. And if these initial setting is

completed, it will change to the standby condition of an event that various kinds are generated, at a step [3]. In addition, the events generated are the timer event (it mentions later for details) set up at the above-mentioned step [2], and a creation request event of the below-mentioned panorama image.

[0037] The detail of a timer event is explained here using drawing 4 . In addition, this timer event is an event generated in order to communicate with the mode controller 42 periodically.

[0038] Then, if this event is generated, it is judged whether setting out of a communication link port is completed at the step [11], and since setting out of a communication link port has not completed only the first time, establishment processing of a communication link port will be performed at a step [12]. In addition, with above-mentioned equipment, establishment of the RS-232C port for example, on a computer apparatus 30 is performed as a communication link port.

[0039] In the timer event of the 2nd [further] henceforth, the existence of received data is judged at a step [13], and when there are received data, analysis processing of received data is performed at a step [14]. That is, at this step [14], the positional information of the lens for variable power of the lens block section 11, the pan of the revolution universal head 50, and the positional information of each direction of a tilt are acquired by the communication link with

the mode controller 42, for example. And the scale-factor information on a zoom, a pan, and the include-angle information on a tilt are taken out from such information, respectively.

[0040] Next, the existence of a data transfer demand (Flag so) is checked at a step [15]. and there is a transfer request (True) -- it is -- since data are already stored in the transmission buffer at the time, while transfer processing is promptly performed using the data of this transmission buffer at a step [16] -- a transfer request -- being nothing (Flag so=False) -- it is carried out.

[0041] and there is no transfer request at a step [15] (False) -- it is -- the time -- a step [17], [18], and [19] -- each -- the value of an internal counter (req cnt) is judged. At the time of (req cnt=0), it is advanced to a step [20] from a step [17], and since the motors 51 and 52 of the revolution universal head 50 are driven, communication link data transfer processing of a location actuation demand is performed absolutely here.

[0042] At the time, it is advanced to a step [21] from a step [18], and since the motor 16 of the lens block section 11 is driven, communication link data transfer processing of a location actuation demand is absolutely performed for moreover (req cnt=1). At the time, it is advanced to a step [22] from a step [19], and creation processing of the panorama image mentioned later is performed for moreover (req cnt=2).

[0043] And after a step [20] and [21] are performed, processing which counts up (req cnt) at a step [23] is performed. Moreover, after a step [22] is performed, processing which returns (req cnt) to 0 at a step [24] is performed. For every processing of each event, processing of these steps [20], [21], and [22] circulates, and is performed by this.

[0044] Creation processing of a further above-mentioned panorama image is performed by [as stating below]. That is, in the step [30] which shows creation processing of this panorama image to drawing 3 , processing of the step [22] odor lever of an above-mentioned timer event is performed by setting up a panorama creation demand (Flag pa).

[0045] Here explains the detail of creation processing of a panorama image using drawing 5 . In addition, in this example, the procedure of processing is performed according to an internal counter (Pano cnt).

[0046] Then, the value of an internal counter (Pano cnt) is first judged by the step [31] and [32]. At the time of (Pano cnt=1), it is advanced to a step [33] from a step [31], and while processing which drives the motor 16 of the lens block section 11 is performed so that the field angle of image pick-up equipment 10 may be set as the maximum wide angle, processing which counts up (Pano cnt) is performed here. In addition, a panorama image is formed by image acquisition of a smaller count by a field angle being set as the maximum wide angle.

[0047] Moreover, it is advanced to a step [34] from a step [32] at the time of (Pano cnt=2), and while processing which drives the motors 51 and 52 of the revolution universal head 50 is performed so that the image pick-up range of image pick-up equipment 10 may be set as the location which performs image acquisition first by creation processing of a panorama image, processing which counts up (Pano cnt) is performed.

[0048] When it is further (Pano cnt) three or more, it is checked that it has been moved to the zoom location and image pick-up range which were set up by the step [35] and [36] an above-mentioned step [33] and [34]. And when it arrives at these setting-out locations, the first image acquisition is performed at a step [37]. Processing which furthermore drives the motors 51 and 52 of the revolution universal head 50 in the image acquisition location of a degree at a step [38] is performed.

[0049] Moreover, the horizontal of the image previously acquired at the step [39], compression processing to a perpendicular direction, etc. are performed, and the creation situation of a panorama image is expressed to the viewing area 62 of a monitor 60 as a step [40]. Processing which furthermore counts up (Pano cnt) at a step [41] is performed, it is judged whether the panorama image was completed at the step [42], and the above actuation is repeated when having not completed.

[0050] and -- if a panorama image is completed at a step [42] -- a step [43] -- a panorama creation demand (Flag pa) -- being nothing (Flag pa=False) -- while being carried out, the panorama image completed at the step [44] is saved, and actuation is ended.

[0051] Thus, it is connected while compression processing of the image acquired while sequential migration of the image pick-up range of image pick-up equipment 10 was carried out, for example by the revolution universal head 50 is carried out, and a panorama image is formed. In addition, the revolution universal head 50 operates here so that it may advance from the always same direction to the target position where it is ordered. A gap of the connection image by the play (backlash of a gear etc.) of the device of the drive system which may be generated by this in the case of connection of an image can be amended.

[0052] Therefore, in this equipment, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be obtained with high resolution by forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle.

[0053] According to this invention for a thing with problems, such as producing sense of incongruity, for example to change of the weather or time amount by

this by the approach of there being a possibility that resolution may fall, even if it uses the lens of an expensive wide angle system with conventional equipment, and inserting in a preservation image, compounding, and forming a panorama image conventionally, these troubles are cancelable.

[0054] In addition, although one set of image pick-up equipment 10 changes the image pick-up range with the revolution universal head 50, for example and a panorama image is picturized in above-mentioned equipment This can arrange two or more image pick-up equipments towards each direction which forms a panorama image instead of using the revolution universal head 50, can switch the video signal from these image pick-up equipments one by one, and can acquire the video signal same also as a driving means.

[0055] Or in above-mentioned equipment, it is possible to install a means to incurvate the image of perimeters, such as a fish-eye lens, and to picturize a wide range image, lens block section 11 the very thing of image pick-up equipment 10, or before that. In this case, the coordinate of the LAT and the direction of LONG is changed with the image processing system 33 of a computer apparatus 30 which constitutes a video-signal processing means, an image processing can be performed and a panorama image can be formed so that it may be projected at a flat surface.

[0056] Therefore, in this equipment, by forming the video signal which the image

pick-up range of an image pick-up means is incurvated, normalizes the video signal from such an image pick-up means, and has a large field angle, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be obtained with high resolution.

[0057] In further above-mentioned equipment, although setting out of the panorama creation demand (Flag pa) in the step [30] of above-mentioned drawing 3 can operate the carbon button shown on a monitor 60 or a user can also perform it by the so-called remote control, setting out can be further performed automatically by setting out by assignment of photography time of day, detection of image recognition (processing) and various kinds of sensors, etc.

[0058] That is, when performing setting out by assignment of photography time of day, for example, the time of day is saved at storage 32 by setting up the time of day which performs a panoramic exposure with the input units 35, such as pointing devices, such as a keyboard attached to the computer apparatus 30 of drawing 1 , and the so-called mouse.

[0059] And the clock (not shown) built in the computer apparatus 30 is compared with the saved setting-out time of day, for example in the step [3] of an event judging of drawing 2 , when both are in agreement, it is ordered in the creation

demand of a panorama image, and photography is performed. In addition, time of day can also perform a seriography automatically by setting up plurality and directing a fixed time interval.

[0060] Or the present and the past compare the image information acquired from image pick-up equipment 10, the difference is detected, and it can be automatically ordered in the creation demand of a panorama image. The image information acquired here is the brightness of an image, the color difference, a profile, a color-balance, etc.

[0061] By the approach of using brightness information there, the brightness average of the part of an image by which current projecting is carried out from image pick-up equipment 10 is compared with the brightness average of some panorama images which are photoed and are saved at storage 32. And when the difference widens more than fixed, it is ordered in the creation demand of a panorama image, and photography is performed. And monitor 60 grade projects the created panorama image promptly.

[0062] In addition, by this approach, in photography of scenery etc., since renewal of photography of the panorama image is automatically carried out when surrounding brightness is changing with time amount progress, it becomes possible to offer the panorama image near the image always picturized with current image pick-up equipment 10.

[0063] Moreover, as shown, for example in drawing 6 , a representation point is specified about the photographic subject currently picturized with image pick-up equipment 10, a model is made combining the brightness and color difference information, and it saves with the positional information at storage 32. And when the same range is always picturized with image pick-up equipment 10 and a difference arises in the position coordinate of a photographic subject model, the creation demand of a panorama image is able to take a photograph by being ordered.

[0064] That is, in A of drawing 6 , as shown in B of drawing 6 , when the position coordinate (X0, Y0) of the original photographic subject model turns into a position coordinate (X1, Y1), $X0 \neq X1$ or $Y0 \neq Y1$ can be judged, as shown in C of drawing 6 , it can be recognized as the photographic subject having moved, and it can be ordered the creation demand of a panorama image, and photography can be started. By this approach, above-mentioned equipment can be used as moving state monitoring system.

[0065] In addition, it is also possible to have a means by which speech information like a microphone can be obtained, to order it the creation demand of a panorama image with audio detection, and to start photography. In this case, as shown, for example in drawing 7 , image pick-up equipment 10 is moved by the driving means of revolution universal-head 50 grade, and two or more

directional microphones are installed in the range which can be picturized. The speech information collected by these directional microphones is inputted into the computer apparatus 30 of drawing 1 .

[0066] And in this computer apparatus 30, if specific speech information is detected in the speech information collected with the microphone, while ordering it the creation demand of a panorama image, it memorizes which direction the directivity of the microphone which detected that speech information is, and if required, photography can be performed from that direction and a panorama image can be updated.

[0067] Thus, by detection of specific speech information, change of a photographic subject can be recognized, it can be ordered the creation demand of a panorama image, and photography can be started. Moreover, by this approach, detection if needed and renewal of a panorama image can be similarly performed using various sensors, such as a photosensor and a pyroelectric sensor, respectively.

[0068] Although [further above-mentioned explanation] it continues, for example throughout the visual field of image pick-up equipment 10 and image pick-up of a panorama image and updating are performed, as shown, for example in drawing 8 , it is also possible to enable it to specify a field to picturize and update on the panorama image which it projects on a monitor 60 using the

input units 35, such as a keyboard and a pointing device (mouse).

[0069] Moreover, it is also possible to enable it to picturize and update only the picturized image and the field which contains the part while displaying the part on a panorama image using the information from various sensors if needed, when change is detected by the part within the limits which can be picturized.

[0070] It is effective as an application for the purpose of [of the automatic photography by the moving state detection by modeling of the photographic subject which mentioned only still such a specific field above especially by the approach of making it into an image pick-up and an updating field, and detection of various kinds of directive sensors] a monitor.

[0071] Therefore, in above-mentioned equipment, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and always good view ** can be performed under every set-up time amount and specific conditions.

[0072] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a display by having formed the computer screen 60 as a display means.

[0073] Therefore, in this equipment, while forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle,

view ** of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be carried out with high resolution by displaying this video signal on a display means.

[0074] Or in this equipment, while forming the video signal which the image pick-up range of an image pick-up means is incurvated, normalizes the video signal from such an image pick-up means, and has a large field angle, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be obtained with high resolution by displaying this video signal on a display means.

[0075] And in these equipments, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and always good view ** can be performed under every set-up time amount and specific conditions.

[0076] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a recording device by having formed the storage 32 as a record means. In addition, with storage 32, the panorama image which direct sequential record of the video signal from image pick-up equipment 10 was carried out, or was formed with the video-signal processor 33 is recorded in this case.

[0077] Therefore, in this equipment, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration is recordable with high resolution by changing the image pick-up range of an image pick-up means, and recording the panorama image compounded with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means.

[0078] Or in this equipment, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration is recordable with high resolution by incurvating the image pick-up range of an image pick-up means, and recording the panorama image normalized with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means.

[0079] And in these equipments, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and always good record can be performed under every set-up time amount and specific conditions.

[0080] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a regenerative apparatus by having formed the storage 32 as a playback means. In addition, with storage 32, the panorama image which direct sequential record of the video signal from image pick-up equipment 10

was carried out, and was reproduced, or was formed with the video-signal processor 33 is recorded and reproduced in this case.

[0081] Therefore, in this equipment, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration is reproducible with high resolution by forming the video signal which reproduces the video signal with which sequential change of the image pick-up range was carried out, compounds this playback video signal, and has a large field angle.

[0082] Or in this equipment, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration is reproducible with high resolution by forming the video signal which reproduces the video signal with which the image pick-up range of an image pick-up means curved, normalizes this playback video signal, and has a large field angle.

[0083] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as transmission equipment by sending out the signal sent to a computer screen 60 from a computer apparatus 30 to a computer network like the Internet through a modem (not shown).

[0084] That is, in such a computer network, it accesses through a network to the configuration of the image pick-up equipment 10 installed in the remote place a

computer apparatus 30 - the revolution universal head 50 from the computer apparatus of arbitration, an indicating equipment, and the equipment by the side of the user who has a modem. By this, the image pick-up image at that time and the panorama image saved at the storage 32 of a computer apparatus 30 can be obtained to the display by the side of a user with the same screen configuration as the monitor 60 of drawing 1 .

[0085] Therefore, in this equipment, view ** of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be carried out with high resolution by forming the video signal which compounds the video signal picturized with the image pick-up means installed in the remote place, and has a large field angle.

[0086] Or in this equipment, view ** of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be carried out with high resolution by forming the video signal which normalizes the video signal with which the image pick-up range picturized with the image pick-up means installed in the remote place curved, and has a large field angle.

[0087] And in these equipments, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and always good view ** can be

performed under every set-up time amount and specific conditions.

[0088] In the equipment of further above-mentioned drawing 1 , this equipment can be carried out as a record medium by considering as what can detach and attach the record medium of storage 32 freely, and taking out this record medium.

[0089] Therefore, in this equipment, the record medium which recorded the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration with high resolution can be obtained by changing the image pick-up range of an image pick-up means, and recording the panorama image compounded with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means.

[0090] Or in this equipment, the record medium which recorded the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration with high resolution can be obtained by incurvating the image pick-up range of an image pick-up means, and recording the panorama image normalized with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means.

[0091] And in these equipments, by performing formation of an image pick-up

with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and an always good record medium can be obtained under every set-up time amount and specific conditions.

[0092]

[Effect of the Invention] According to invention of claim 1, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be obtained now with high resolution by forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle.

[0093] According to this invention for a thing with problems, such as producing sense of incongruity, for example to change of the weather or time amount by this by the approach of there being a possibility that resolution may fall, even if it uses the lens of an expensive wide angle system with conventional equipment, and inserting in a preservation image, compounding, and forming a panorama image conventionally, these troubles are cancelable.

[0094] According to invention of claim 2, by forming the video signal which the image pick-up range of an image pick-up means is incurvated, normalizes the video signal from such an image pick-up means, and has a large field angle, it is an easy configuration and the panorama image which does not produce sense

of incongruity to change of the weather, time amount, etc. can be obtained with high resolution.

[0095] Under every set-up time amount and specific conditions, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and, according to invention of claims 3-8, always good view ** can be performed.

[0096] While forming the video signal which the image pick-up range of an image pick-up means is changed, compounds the video signal from such an image pick-up means, and has a large field angle according to invention of claim 9, view ** of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be carried out with high resolution by displaying this video signal on a display means.

[0097] While forming the video signal which the image pick-up range of an image pick-up means is incurvated, normalizes the video signal from such an image pick-up means, and has a large field angle according to invention of claim 10, the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with an easy configuration can be obtained with high resolution by displaying this video signal on a display means.

[0098] Under every set-up time amount and specific conditions, by performing

formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and, according to invention of claims 11-16, always good view ** can be performed.

[0099] According to invention of claim 17, by changing the image pick-up range of an image pick-up means, and recording the panorama image compounded with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be recorded with high resolution.

[0100] According to invention of claim 18, by incurvating the image pick-up range of an image pick-up means, and recording the panorama image normalized with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be recorded with high resolution.

[0101] Under every set-up time amount and specific conditions, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and, according to invention of claims 19-22, always good record can be performed.

[0102] According to invention of claim 23, by forming the video signal which the

image pick-up range reproduces the video signal by which sequential change was carried out, compounds this playback video signal, and has a large field angle, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be reproduced with high resolution.

[0103] According to invention of claim 24, by forming the video signal which reproduces the video signal with which the image pick-up range of an image pick-up means curved, normalizes this playback video signal, and has a large field angle, it is an easy configuration and the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be reproduced with high resolution.

[0104] According to invention of claim 25, by forming the video signal which compounds the video signal picturized with the image pick-up means installed in the remote place, and has a large field angle, it is an easy configuration and view ** of the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. can be carried out with high resolution.

[0105] By forming the video signal which normalizes the video signal with which the image pick-up range picturized with the image pick-up means installed in the remote place curved, and has a large field angle according to invention of claim 26, it is an easy configuration and view ** of the panorama image which does not

produce sense of incongruity to change of the weather, time amount, etc. can be carried out with high resolution.

[0106] Under every set-up time amount and specific conditions, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and, according to invention of claims 27-32, always good view ** can be performed.

[0107] According to invention of claim 33, by changing the image pick-up range of an image pick-up means, and recording the panorama image compounded with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means, it is an easy configuration and the record medium which recorded the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with high resolution can be obtained.

[0108] According to invention of claim 34, by incurvating the image pick-up range of an image pick-up means, and recording the panorama image normalized with direct sequential record or a video-signal processing means in the video signal from such an image pick-up means, it is an easy configuration and the record medium which recorded the panorama image which does not produce sense of incongruity to change of the weather, time amount, etc. with high resolution can be obtained.

[0109] Under every set-up time amount and specific conditions, by performing formation of an image pick-up with an image pick-up means, and a panorama image, the image pick-up of an event required for a monitor is performed, and, according to invention of claims 35-38, an always good record medium can be obtained.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of an image pick-up and the whole system of an example of a display with which this invention is applied.

[Drawing 2] It is flow chart drawing for explanation of the actuation.

[Drawing 3] It is flow chart drawing for explanation of the actuation.

[Drawing 4] It is flow chart drawing for explanation of the actuation.

[Drawing 5] It is flow chart drawing for explanation of the actuation.

[Drawing 6] It is drawing for the explanation.

[Drawing 7] It is drawing for the explanation.

[Drawing 8] It is drawing for the explanation.

[Description of Notations]

10 Image Pick-up Equipment, 11 Lens Block Section, 12 CCD, 13 Signal Separation / Automatic-Gain-Control Equipment, 14 A/D-conversion equipment, 15 A signal processor, 16 The stepping motor for zoom, 20 A television monitor, 30 A computer, 31 video capture boards, 32 Storage, 33 An image processing system, 34 A control unit, 35 Input unit, 41 A camera controller, 42 A mode controller, 43 Punch Ruta controller, 50 A revolution universal head, 51 The stepping motor for pans, 52 The stepping motor for tilts, 60 A computer screen, 61 The viewing area of an image pick-up image, 62 Viewing area of a panorama image